

Amendments to the Specification:

Please replace paragraph [0011] at pages 2-3 with the following amended paragraph:

[0011] It is preferable that, in step (b), the substrate with the boron thin film and the magnesium source are heated at a temperature of 600-1000°C in the absence of any reactive gas such as air.

Please replace paragraph [0013] at page 3 with the following amended paragraph:

[0013] It is preferable that both ends of the container made of tantalum or niobium are sealed in an inert gas atmosphere, and both ends of the container made of quartz are sealed in a vacuum. In step (b), the temperature of the heat source is raised to 600-1000°C, and the substrate with the boron thin film and the magnesium source are placed inside the heat source, rapidly heated at the temperature of 600-1000°C for 10-60 minutes, and cooled in the heat source to room temperature.

Please replace paragraph [0022] at page 5 with the following amended paragraph:

[0022] Step 1 of forming a boron thin film by PLD will be described in greater detail with reference to FIG. 1. A coin-like target 16 for use in the deposition of the boron thin film was prepared by stuffing a cylindrical mold (having a diameter of 10-100 mm) with boron powder having a grain diameter of 1-5 μm and applying pressure on the order of 5-10 tons. The target 16 is fixed to a support plate for the target 17 and irradiated with an excimer laser beam. As a result, boron evaporates from the target 16 and forms a boron thin film on a substrate 14 fixed to the top of a support plate 12 for substrate. In FIG. 1, reference numeral 11 denotes a direction in which the laser beam

is radiated, and reference numeral 15 denotes boron evaporation toward the substrate 14.

Please replace paragraph [0023] at pages 5-6 with the following amended paragraph:

[0023] The boron deposition is carried out under the conditions of a laser pulse frequency of 1-10 Hz, preferably about 8 Hz, and a laser beam energy density of 20-30J/cm² in consideration of boron's vaporizing temperature. When boron deposition is continued for about 1-2 hours under the above conditions, an amorphous boron thin film having a thickness of about 0.5-1 μm and a mirror-like glossy surface is obtained.

Please replace paragraph [0026] at page 6 with the following amended paragraph:

[0026] Magnesium is easy to oxidize and has a melting temperature of 650°C and a vaporizing temperature of 1107°C, which are much lower than the melting point of 2100°C and vaporizing temperature of 4000°C of boron. Magnesium needs high-pressure reaction conditions due to its poor reactivity at atmospheric pressure. Magnesium also has higher vapor pressure at a high temperature, and thus heating magnesium in a sealed container can create a high-pressure environment. Based upon these characteristics of magnesium, the boron thin film is reacted with magnesium under continuous high-pressure. This process will be described in greater detail with reference to FIG. 2.

Please replace paragraph [0029] at page 7 with the following amended paragraph:

[0029] It is preferable that the boron thin film 20 and the magnesium source 22 are heated at a temperature of 600-1000°C. If the heating temperature of the boron thin film 20 and the magnesium source 22 is less than 600°C, magnesium diffusion into the boron thin film 20 hardly occurs. If the heating temperature exceeds 1000°C, unintended crystalline structure is formed. The heat source 26 is not limited to the type of FIG. 2, and a vertical or box type electric furnace can be used as the heat source 26.

Please replace paragraph [0030] at page 7 with the following amended paragraph:

[0030] Preferably, the thermal process is carried out in a short time. In particular, the temperature of the heat source 26 is raised to 600-1000°C, and a sample is moved to a uniform-temperature center region of the heat source 26 within 30 minutes, preferably in 5 minutes. The sample is heated at the temperature of 600-1000°C for 2 hours, preferably 30 minutes, drawn out of the heat source 26, and cooled for 30 minutes to 2 hours, preferably 1 hour. Such a rapid thermal process can effectively prevent degradation of the magnesium diboride thin film which would be caused by chemical reaction with the substrate underlying the magnesium diboride thin film.